
सामान्य प्रयोजनार्थ मशीनरी एवं
स्पिंडल तेल की विशिष्टि

भाग 1 मशीनरी तेल

(दूसरा पुनरीक्षण)

Specification for General Purpose
Machinery and Spindle Oils

Part 1 Machinery Oils

(Second Revision)

ICS 75.100

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भारतीय मानक ब्यूरो
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FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards on the recommendation of the Lubricants and their Related Products Sectional Committee and approval of the Petroleum, Coal and Related Products Division Council.

General purpose machinery and spindle oils cover are specifically used various types of non-critical (total loss) applications where the oil retention is for a small period of time. For more critical applications and high speed machinery anti-rust protection coupled with oxidation/thermal stability IS 11696 : 1986 may be followed.

This standard was initially published in 1954 as IS 493 'Specification for general purpose machinery and spindle oils'. The Committee decided to bifurcate the standard into two parts based on their viscosity and was first revised in 1981. In the first revision (1981) requirements for viscosity, pour point, flash point, acidity and saponification value was modified. Additional requirements for colour was added. In order to meet the consumers requirements, the grades have been increased from 5 to 8. Further, these grades have been designated according to their viscosity at 40°C as per ISO Viscosity classification (*see* IS 9466 : 1980 'Viscosity classification for industrial liquid lubricants').

This Indian Standard is published in two parts. The other part in this series is:

Part 2 Spindle oils

In this second revision, the standard is updated including the clause for references.

The composition of the technical committee responsible for the formulation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*). The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

**SPECIFICATION FOR GENERAL PURPOSE
MACHINERY AND SPINDLE OILS**

PART 1 MACHINERY OILS

(Second Revision)

1 SCOPE

1.1 This standard (Part 1) prescribes the requirements and the methods of sampling and test for general purpose machinery oils for various types of non-critical (total loss) applications. It does not cover oil compounded with fixed oils or soaps.

1.2 This standard is not intended to cover oils containing additives but such oils are not precluded.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute the provisions of the standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
1447 (Part : 3) : 1992	Petroleum and its products — Methods of sampling: Part 3 Method of sampling of semi-solid and solid petroleum products
1448	Methods of test for petroleum and its products:
[P : 2] : 2007	Petroleum products and lubricants — Neutralization number — Potentiometric titration method (second revision)
[P : 4/Sec 1] : 1984/ ISO 6245 : 1982	Petroleum products — Determination of ash (second revision)
[P : 10/Sec 2] : 2013/ ISO 3016 : 1994	Cloud point and pour point, Section 2 Determination of pour point (second revision)
[P : 12] : 2013/ ISO 2049 : 1996	Determination of Colour (ASTM Scale) (second revision)

<i>IS No.</i>	<i>Title</i>
[P : 15] : 2004/ ISO 2160 : 1998	Corrosiveness to copper — Copper strip method (third revision)
[P : 25/Sec 1] : 2018/ ISO 3104 : 1994	Transparent and opaque liquids, Section 1 Determination of kinematic viscosity and calculation of dynamic viscosity (second revision)
[P : 55/Sec 1] : 2004	Determination of saponification value of petroleum products (first revision)
[P : 69] : 2013/ ISO 2592 : 2000	Determination flash and fire points — Cleveland open cup method (first revision)

3 GRADES

The oils shall conform to one of the 8 viscosity grades as distinguished by the prescribed viscosity limits given in Table 1.

4 REQUIREMENTS

4.1 General

The material shall be made from refined mineral oils. It shall be bright, clear and free from water, dirt and other suspended impurities.

4.2 The oils shall also comply with the requirements given in Table 1.

5 PACKING AND MARKING

5.1 Packing

The material shall be securely closed and packed in containers of metal or any suitable material as agreed to between the purchaser and the supplier.

Table 1 Requirement for General Purpose Machinery Oils
(*Clauses 3 and 4.2*)

Sl No.	Characteristic	Requirements								Method of Test Ref to IS : 1448
		Grade I VG 32	Grade II VG 46	Grade III VG 68	Grade IV VG 100	Grade V VG 150	Grade VI VG 220	Grade VII VG 320	Grade VIII VG 460	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	Kinematic viscosity, in mm ² /s at 40°C	28.8 to 35.2	41.4 to 50.6	61.2 to 74.8	90.0 to 110	135 to 165	198 to 242	288 to 352	414 to 506	[P : 25/ Sec1]
ii)	Pour point, °C, Max	←————— 0 —————→								[P : 10/ Sec 2]
iii)	ASTM colour, Max	5.0	5.5	6.0	6.5	7.5	8.0	8.0	8.0	[P : 12]
iv)	Flash point (Cleveland open cup), °C, Min	150	160	160	170	170	200	200	240	[P : 69]
v)	Ash, percent by mass, Max	0.01								[P : 4/ Sec1]
vi)	Total acidity, mg KOH/g, Max	0.15	0.15	0.15	0.15	0.15	0.20	0.20	0.20	[P : 2]
vii)	Inorganic acidity	←————— NIL —————→								[P : 2]
viii)	Saponification value, Max	←————— 1.0 —————→								[P : 55]/ Sec 1
ix)	Copper strip corrosion at 100°C, for 3 h	←————— Not worse than No.1 —————→								[P : 15]
NOTE — 1 mm ² /s = 1 cSt										

5.2 Marking

5.2.1 Material shall be marked with the following information:

- Name and type of material;
- Manufacturer's name, initials or trade-mark, if any;
- Net mass of material;
- Identification in code or otherwise to enable the lot of consignment or manufacture to be traced back from records; and
- Any other statutory requirements.

5.2.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau*

of Indian Standards Act, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the standard mark.

6 SAMPLING

Representative samples of the material shall be drawn as prescribed in IS 1447 (Part 3).

6.1 Number of Tests

All characteristics given in the specification shall be tested on the composite sample.

6.2 Criteria for Conformity

The lot shall be declared as conforming to this specification, if all the test results on the composite sample satisfy the requirements of this specification.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Lubricants and Their Related Products Sectional Committee, PCD 25

<i>Organization</i>	<i>Representative(s)</i>
Gulf Oil Lubricants India Ltd, Mumbai	DR Y. P. RAO (Chairman) SHRI GIRISH JANGE (<i>Alternate</i>)
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SHRIMATI NAGAMANI T.
SCIENTIST 'D' (PCD), BIS

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Indian Additives Limited, Chennai	SHRI AANISH DWARKADAS SHRI SRIKANTHAN (<i>Alternate</i>)
Indian Institute of Petroleum, Dehradun	DR G. D. THAKRE SHRI DEVENDRA SINGH (<i>Alternate</i>)
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